

## TITLE OF THE INVENTION

MELANOCORTIN-3 RECEPTOR DEFICIENT CELLS, NON-HUMAN  
TRANSGENIC ANIMALS AND METHODS OF SELECTING COMPOUNDS  
WHICH REGULATE BODY WEIGHT

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## ABSTRACT OF THE DISCLOSURE

Cells and non-human transgenic animals have been engineered to be deficient in the gene encoding the melanocortin-3 receptor protein (MC-3R). MC-3R deficient transgenic animals have increased fat mass and reduced lean body mass, showing that the MC-3R protein is involved in the regulation of body fat and muscle mass. These MC-3R deficient transgenic animals can be used to select for and test potential modulators of MC-3R. This data allows for methods of screening for MC-3R modulators which effect body weight and associated methods of treating various disorders associated with inappropriate regulation of body weight. The disclosure also relates to a MC-3R/MC-4R double knockout mouse which can be used to select for and test potential modulators (e.g., agonists or antagonists) of MC-3R and/or MC-4R. It is shown that MC-3R serves a non-redundant role, when compared to MC-4R, in the regulation of energy homeostasis.